





there a year or two before his death, he passed, "in dignified repose, his evening of life, amid the flowers which he had gathered from all quarters of the globe, and which he tended with loving hands." The same friend says, "He had retired from the active practice of his profession, but his interest in all things pertaining to its advancement was as earnest and eager as in those years when he was at the head of ophthalmology at the world's capital. As we sat there that balmy afternoon, on the grassy slope facing the South Downs, with a silvery strip of sea stretching beyond, on which ever and anon the sunshine showed the glint of a passing sail, the discourse drifted into diverse channels, revealing always the liberality and breadth of view, and the extent of general knowledge, which made him the man he was." P. S.

[We are indebted to the kindness of Lady Bowman for permission to publish the portrait of Sir Wm. Bowman. The photograph here reproduced was taken on April 16, 1891.—EDS.]

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## REPORT OF THE EXAMINATION OF NINE EYES IN WHICH A FOREIGN BODY HAD REMAINED EMBEDDED FOR AN UNUSUALLY LONG TIME.

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The nine cases\* recorded in tabular form in this paper are of interest from the unusually long time which elapsed between the implantation of a foreign body and the enucleation of the eye. In the shortest there had been an interval of 14 years. In seven the foreign body had been embedded more than 20 years, and in case 7 as long as 28 years. In cases 1, 6, and 7 excision was performed because the eye was blind and thought to contain a foreign body, not on account of the onset of any fresh symptoms. In cases 2, 4, 5,

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\* From the Pathological Records at Moorfields Hospital.

8, and 9 it was the occurrence of pain which ultimately necessitated its removal, and in case 3 the onset of sympathetic ophthalmitis in the other eye. In this case sympathetic ophthalmitis did not come on until 15 years after the receipt of injury, during the whole of which time the exciting eye appears to have been quiescent. About the same time, or just before the sight began to fail in the other eye, however, it became painful. In the report of a committee of the Ophthalmological Society, based on 200 cases of sympathetic ophthalmitis,\* there is only one recorded in which a longer interval than this (*viz.*, 20 years) had elapsed between the injury and the onset of inflammatory symptoms in the second eye. Pathological examination of the exciting eye in case 3 showed it to contain a fragment of shot embedded in a cup of bone on the inner surface of the choroid; no microscopical examination of the eye was made. In the eye in case 9, in which a foreign body had been implanted 26 years, and which became painful a month before excision, microscopical examination showed, scattered throughout the uveal tract, nodules of lymphoid cells just like those met with in eyes which excite or suffer from sympathetic ophthalmitis. This eye did not give rise to sympathetic mischief, still it is interesting to find in an old injured eye fresh inflammatory changes resembling those found in eyes which excite it.

The question naturally arises in connection with these cases, Was there anything in the nature of the foreign bodies or in the position in which they lodged which allowed of the unusual tolerance which these eyes exhibited towards them?

With regard to the nature of the foreign bodies there is little to be said. All of them were metallic; all but two were either pieces of iron or steel. In case 1 it was a piece of gun-cap, and in case 3 a splinter from a bullet. It is worthy of note that in cases 1, 6, and 8

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\* *Trans. Ophth. Soc., Vol. VI.*

the foreign bodies easily crumbled up on being touched, and in cases 2 and 7 they had become oxidised on the surface. It would seem that even pieces of metal embedded in the body tend to become absorbed, and if left long enough might ultimately disappear.

It would naturally be supposed that foreign bodies embedded in structures either destitute of nerves and vessels, or only scantily supplied with them, would be less likely to cause irritation than in other parts. These cases confirm this view. In four of them, Nos. 2, 5, 7, and 9, the foreign body was situated in the lens; in two, Nos. 4 and 6, in the sclerotic; and in two, Nos. 1 and 8, in the vitreous. In case 3, as before mentioned, it was found in a shell of bone on the inner surface of the choroid. Foreign bodies that are free in the vitreous usually sink to its lowest part and lie on the posterior part of the ciliary body—a part very liable to irritation. In cases 1 and 8 this had not occurred; in the former the foreign body was encapsuled in a mass of fibrous tissue situated over the optic disc, and in the latter it lay in the anterior portion of the vitreous just behind the lens.

In cases 3, 6, and 7 bone was found within the eye. That in cases 3 and 7 was in the usual form and position, situated around the optic-nerve entrance on the inner surface of the choroid. That in case 6 was very unusual. It formed a narrow twisted band, stretching from the position of the ora serrata on one side of the globe to that on the other, and passing across the spot where the foreign body was found embedded in the sclerotic. Microscopical examination of this band of bone shows that there is a gap in the elastic lamina of the choroid beneath it, and that part of the mass of bone projects into this gap, some of it being situated in the capillary layer of the choroid. The most probable explanation of this condition is that the blow and entrance of the foreign body had caused a partial rupture of the choroid, and that the bone had developed in the plastic exudation thrown out along it.

Pathological Examination of Eyeball.

No. of Case. Reg. No.	Name and Date of Excision.	Age at Time of Excision.	Interval between Injury and Excision.	Nature of Injury and History of Case.	Pathological Examination of Eyeball.
CASE 1. 2128.	Frank C. Aug. 3, 1886.	36	24 years.	Left eye injured by a gun-cap. Vision reduced to p.l.	Opacity in cornea; occluded pupil, a rent in the iris opposite the corneal scar. Lens absent. A white fibrous mass situated over the optic disc protruding into the vitreous. In this mass a piece of metal found, which crumbled upon being touched.
CASE 2. 2258.	Donald G. Feb. 10, 1887.	33	24 years.	Right eye injured by a piece of iron or steel which struck him while he was watching a blacksmith at work. Sight lost 6-8 months later, but p.l. until 12 months ago. Painful lately.	T.n.—Central opacity of cornea; anterior chamber shallow. Iris adherent to cornea at seat of the opacity, and to the lens capsule. Embedded in the lens is what appears to be a small fragment of metal, the surface of which has become oxidised; it is not attracted by the magnet. The retina completely detached from ora serrata to O.D. There are three small cysts protruding from its outer surface.
CASE 3. 2281.	Joseph Q. March 17, 1887.	33	15 years.	Right eye struck by a splinter from a bullet which rebounded from a target. After injury sight gradually failed. No trouble with it until 3 months ago, when it became painful, and about the same time the sight of his left eye became dim; this dimness has continued up to now. Condition of left eye, keratitis punctata, slight neuritis, general haze of vitreous, pupil active, V $\frac{9}{24}$ and J8. T.n.	T-2.—Eyeball much shrunken. Sclerotic puckered. Cornea nearly clear. Anterior chamber deep. Iris green in colour, much thickened and firmly adherent to lens capsule. Lens shrunken, densely opaque, calcareous patch in its anterior part. Retina completely degenerated. Choroid has a thick plate of bone on its inner surface. In the hollow of this bony cup lies a small bent fragment of shot, around it is a large quantity of cholesteroline. The seat of entrance of the F.B. is in the sclerotic, some distance from the corneal margin on the inner side.



No. of Case, Reg. No.	Name and Date of Excision.	Age at Time of Excision.	Interval between Injury and Excision.	Nature of Injury and History of Case.	Pathological Examination of Eyeball.
CASE 4. 2457.	John F. Oct. 27, 1887.	56	26 years.	Left eye struck by a piece of iron. Occasional attacks of pain.	Eyeball shrunken. Sclerotic puckered; firmly embedded in it at the posterior part below the optic nerve, is an irregular flat chip of metal. It measures 13 mm. $\times$ 6 mm. It protrudes through the posterior part of the globe. The contents of the eye are matted about this chip and the individual structures are unrecognisable.
CASE 5. 2900.	David J. July 2, 1889.	65	23 years.	Left eye struck by a piece of iron while riveting. Blind since the injury. Great pain in it the last fortnight.	Shrunken eyeball. Sclerotic puckered. Puckered cicatrix at upper margin of cornea. Lens shrunken; embedded in it is a piece of steel. An inflammatory membrane stretches across the globe in the ciliary region. Retina shrunken, and completely detached from ora serrata to O.D.
CASE 6. 2910.	Henry O'M. July 13, 1889.	29	14 years.	Right eye struck by a piece of steel from a chisel.	Cornea clear. Numerous crystals of cholesteroline in the anterior chamber. Sclerotic has embedded in it, and projecting slightly from its outer surface, an F.B. situated a little above and to the inner side of the optic nerve. It easily crumbles upon pressure between the finger and thumb. Lens shrunken and calcareous. Retina is completely detached except in the neighbourhood of the F.B. Choroid has on its inner surface an irregularly twisted band of bone, which measures 4 mm. in width in its widest part, and which is raised some height above the surrounding choroid. It extends from the ora serrata on one side of the globe and passes below the optic disc to the ora serrata on the opposite side. Microscopical examination shows this band to consist of trabeculae of true bone, with well-marked lacunae. There is a gap in the elastic lamina of the choroid, and in the uveal pigment layer where it is situated. Most of it is on a level internal to the elastic lamina; some of it, however, is situated in the tissue of the choroid itself, in the capillary layer. The vessels of the choroid about this band of bone are much dilated.

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CASE 7. 3172.	Richard D. June 24, 1890.	47	28 years.	Left eye injured by a chip of steel. Patient states that a piece was removed soon after the injury. Has never seen with the eye since the accident.	Calcareous opacity of cornea in its lower part. Pupil filled by a thick mass of fibrous tissue which unites the iris to the cornea at the seat of the opacity. Lens shrunken and displaced downwards; embedded in it is a piece of metal, which has become oxidised on the surface. An inflammatory membrane stretches across the globe behind the lens in the ciliary region. Umbrella-shaped detachment of retina. Choroid much atrophied, a plate of bone on its inner surface around the O.D.
CASE 8. 3183.	George W. July 5, 1890.	42	20 years.	Left eye wounded by a piece of steel; blind since. No pain until 3 days ago.	T increased.—Faint opacity about the centre of the cornea. Lens shrunken. White in colour, with cholesterine crystals in it. It lies in front of the iris, in the lower part of the anterior chamber. Just behind the lens, in the outer half at the lower part of the eye, is a small piece of metal, which easily crumbled up on being touched. The anterior chamber is shallow, its angle narrowed. There is marked pigmentation of the retina and atrophy of the choroid. The optic disc is cupped.
CASE 9. 3507.	George L. January 28, 1892.	46	26 years.	Right eye injured by a chip of steel. Sight gradually failed. Quite blind 15 years. No pain until a month ago.	Scar in lower part of cornea. Anterior chamber deep. Pupil small and eccentric; hole in lower part of iris. Uveal pigment on back of iris absent for a short distance around this hole. In the outer half of the globe, suspended by a thin tag of grey membrane attached to the posterior border of the ciliary body at the upper part, is a small fragment of metal about 2 mm. square. It floats free except for this tag. The lens is absent; probably the piece of metal lodged in the lens, which has become absorbed from around it and the membrane by which it is suspended, represents the remains of lens, capsule and suspensory ligament. There are numerous branching pigment patches in the retina, chiefly in the equator, and considerable choroidal atrophy. Microscopical examination shows nodules of round cells scattered throughout the choroid ciliary body and iris.





